REMARKS

In the Office Action, the Examiner rejected Claims 2 and 12, which were all of the then pending claims, under both 35 U.S.C. 101 and 35 U.S.C. 112. The Examiner also objected to a minor informality in Claim 12. None of the claims was rejected over the prior art.

More specifically, Claims 2 and 12 were rejected under 35 U.S.C. 101 on the grounds that the claims are directed to non-statutory subject matter, and in particular, are directed to manipulation of a mathematical array. Claims 2 and 12 were further rejected under 35 U.S.C. 112, first paragraph, on the grounds that the specification does not enable those of ordinary skill in the art to determine the "complementary variable" described in the claims. The Examiner also argued that the terms "complementary variable" and "different complementary variable" in Claims 2 and 12 are vague and indefinite, and thus rejected the claims under 35 U.S.C. 112, second paragraph.

Claims 2 and 12 are being cancelled, and new Claims 13 and 14 are being substituted therefor, respectively, to improve the form and readability of the claims. It is believed, also, that the language of the new claims fully address the Examiner's objections to claims 2 and 12, and makes it clear that the claims are statutory, are clear and definite, and are fully enabled by the specification. The Examiner is thus asked to allow new Claims 13 and 14.

The present invention, as defined by the new, independent claims 13 and 14, relates to a method for analyzing the data structure of an array of elements. This is done by changing, or transforming, the array in order to make the analysis easier or more useful. The invention is very well suited for use with DNA and RNA representations, which are comprised of an array of four bases. The DNA representation is comprised of the elements A, T, C and G, and the RNA representation is comprised of the elements A, U, C and G.

The array being transformed is referred to as the target array. In a first array transformation procedure of this invention, certain elements in the target array are replaced, or changed into, other elements that indicate whether or not that element occurs earlier in the array, and, if so, where that element occurs earlier in the target array.

More specifically, the elements of a target array are looked at in a predetermined direction, such as left to right. When a predefined element is found that is the same as an earlier element in the array, that predefined variable is changed into information that indicates both (i) that the same element occurs earlier, and (ii) how much earlier that element occurs.

With this first transformation procedure, it is possible that two different target arrays might be transformed into identical arrays. When this happens, a second transformation procedure can be used that changes the original target arrays a further array.

As explained in the present application, after the target arrays are transformed, they can be more easily analyzed to study the structure of the original arrays.

Page 7 of the specification gives an example of the first transformation procedure of the invention. In this example, the target array is: ABxByAzwz. This array is processed left to right, and the elements that are subject to being changed are w, x, y and z. Also, in this example, x and z are complementary, and y and w are complementary.

Proceeding left to right, the array is transformed as follows:

i) A stays A,

ii) B stays B,

iii) x is changed to 0 (because neither it nor its complement occurs earlier),

iv) B stays B,

v) y is changed to 0 (because neither it nor its complement occurs earlier),

vi) z is changed to 4 (because its complement, x, occurs 4 locations earlier),

vii) w is changed to 3 (because its complement, y, occurs 3 locations earlier),

viii) z is changed to 6 (because its complement, x, first occurs 6 locations earlier).

The end result is that ABxByAzwz is changed to AB0B0436.

In drafting new Claims 13 and 14, special care has been taken to describe clearly the procedures for determining the elements of the first and second arrays. Generally, each element of the first array is determined in one of two ways, depending on whether the corresponding element of the target array is the first occurrence, or not, of that element in the target array. At the first occurrence of an element in the target array, the corresponding element of the first array is information that indicates that this occurrence in the target array is the first occurrence of the element in the target array. At subsequent occurrences of the element in the target array, the corresponding element of the first array is information that indicates the location of the first occurrence of the element in the target array.

Each element of the second array is, likewise, determined in one of two ways. But here, which procedure is used does not depend on whether the corresponding element of the target array is or is not the first occurrence of that element in the target array. Instead, which procedure is used depends on whether another specified element that is different from the former element – and sometimes referred to as its complement – occurs earlier in the target array. One procedure is used if that different element does occur earlier in the target array, and a second procedure is used if that different element does not occur earlier.

New Claims 13 and 14 now more clearly describe the procedure to form the first and second arrays, and in particular, the claims use the term "complement" more clearly. Also, it may be noted that neither of the new claims use the term "different complementary variable", but instead refer to "different" elements.

It is believed that new Claims 13 and 14 are clear and definite and fully comply with the requirements of 35 U.S.C. 112, second paragraph.

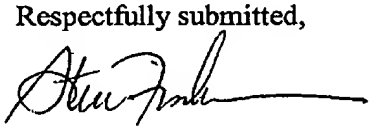
These claims also satisfy the enablement requirement of 35 U.S.C. 112, first paragraph. This is because, in the practice of the present invention, any suitable procedure may be used to determine whether one element is a complement of another element, or is the specified different element. Those of ordinary skill in the art may use different techniques to determine or to identify these complementary elements depending on the specific application to which the present invention is put. What is important in the present invention is not how elements are identified as being complements, but only that elements be identified as complements. Any appropriate procedure may be used to do that.

In addition, new Claims 13 and 14 define statutory subject matter. Both of these claims are expressly directed to analyzing the data structure of a target array. Moreover, both of these claims positively set forth a step of analyzing the structure of the target array. It is clear, then, that both new Claims 13 and 14 define methods for analyzing structures. This is a practical, tangible and useful result, and is statutory subject matter within the meaning of 35 U.S.C. 101.

It is noted, as mentioned above, that neither of claims 2 or 12 was rejected over the prior art, and new Claims 13 and 14 similarly distinguish over the prior art.

For the reasons advanced above, new Claims 13 and 14 define statutory subject matter, are clear and definite, and are fully enabled by the specification. The Examiner is, accordingly, requested to allow claims 13 and 14 and to allow this application. If the Examiner believes that at telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,



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